FARM INDEX

U. S. Department of Agriculture
March 1978

Storing America's "Amber Waves of Grain"

Outlook

Moving into the second quarter of 1978, farmers' participation in the new farm program remains the big question mark—especially that grain reserve program (see page 12).

When it comes to crop supplies, the numbers speak for themselves. Many records—wheat, feed grains, and soybeans. Cotton's up there, too.

Three in a row. In each of the past 3 years, the U.S. wheat crop topped 2 billion bushels, outpacing utilization. Come May 30—the close of the current marketing year—wheat stocks will mount to a record 1.2 billion bushels.

Large supplies will limit price advances from the mid-February quotation of around $2.50 a bushel (loan rate is $2.25).

But big 1976 wheat loans maturing in late February hang over the market. If all these holdings are sold on the open market—rather than going into the food reserve program—wheat prices might weaken.

Wheat exports are doing okay: They should surpass 1 billion bushels in 1977/78, at least 50 million more than in the previous year. Domestic use will climb about a tenth.

Feed grains: same story. Stocks of feed grains on January 1 totaled a record 186 million short tons, 14 percent above a year earlier. Domestic feed use is likely to increase around 6 percent because of improved feed-livestock price ratios and expanding output of livestock and livestock products.

World 1977 coarse grain crops were large, but foreign demand growth is holding U.S. exports slightly above the 55 million short tons shipped in each of the past 2 years.

Although disappearance will be record large, it falls short of the bumper U.S. feed grain crop. As a result, a further 10-15-million-ton buildup in carryover stocks to some 47 million short tons appears likely by this fall. Consequently, prices received by farmers for 1977 corn probably will range around the $2-per-bushel loan rate.

Heavy participation by farmers in the price support program is helping to keep corn prices firm. Prices this summer will largely hinge on prospects for crops here and abroad and the extent that farmers participate in the grain reserve program.

Soybeans no exception. That huge soybean crop of 1977 boosted 1977/78 supplies to a record 1.8 billion bushels—a fifth more than in the previous year.

With animal numbers on the rise and soybean meal cheaper, domestic demand should increase enough to generate a crush which might about match the record set 2 years ago.

U.S. exports of soybeans and soybean products continue strong. In fact, soybean exports are expected to pass the 600-million-bushel mark for the first time.

Cotton joins the crowd. Next summer's carryover may hit 6 to 6½ million bales, biggest since 1968/69. Total supply is 17½ million, also the largest since 1968/69.

An abrupt shift from tight to more plentiful supply caused cotton prices to tumble over the past year. On the brighter side, lower prices put cotton in a better competitive position with man-made fibers, so domestic mill use should pick up in 1978.

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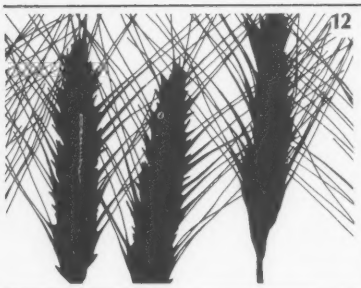

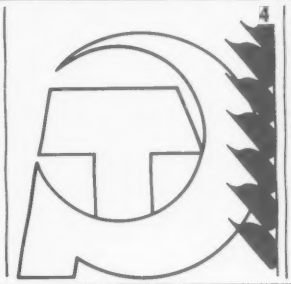

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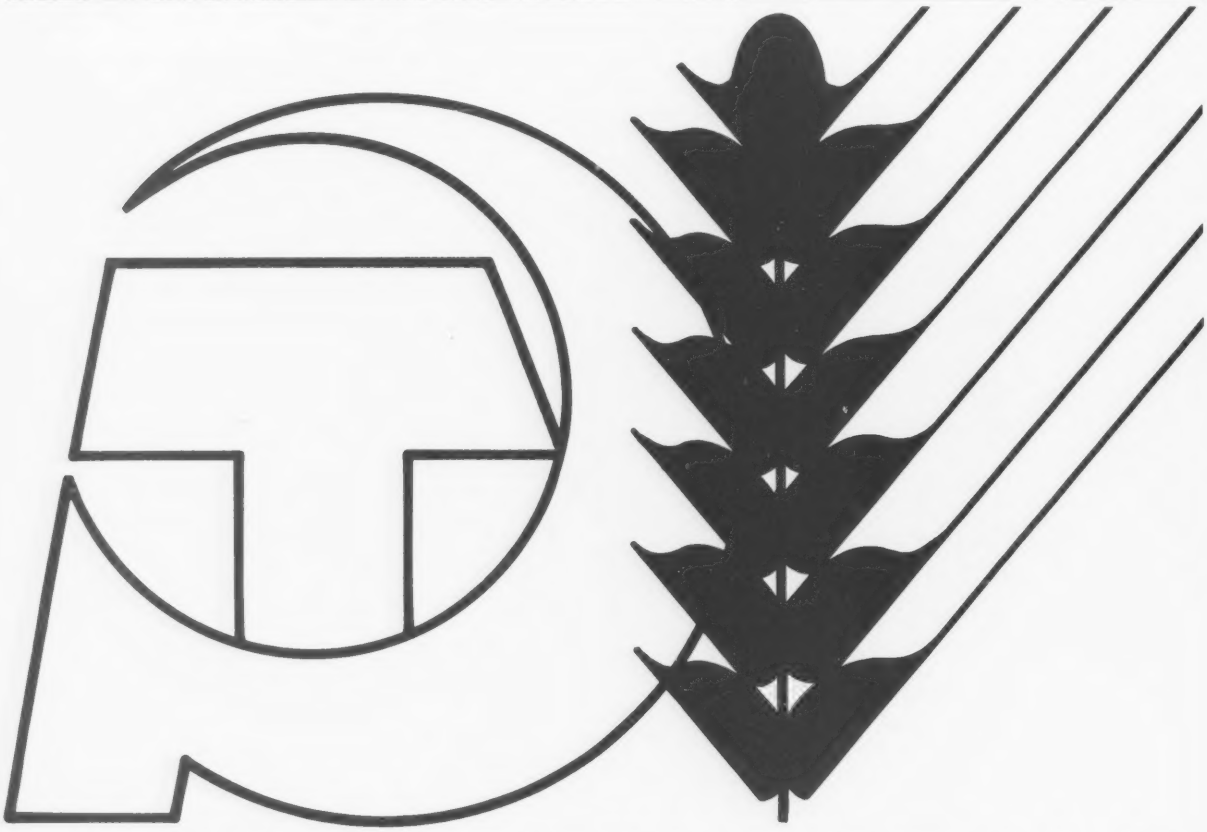
The 5-Year Plan . . . A U.S.S.R. Agricultural Blueprint



Although the Russian sickle may have lost its edge with the recent Soviet grain shortfall, the U.S.S.R. Government still packs an agricultural punch through its current 5-Year Plan.

This year marks the third year of the country's tenth such plan, and many of the goals appear on target, although some seem a bit farfetched for 1980. In a nutshell, the 1976-80 Plan calls for:

- Increased specialization through interfarm cooperation and integration of the agricultural processes.
- Modification of the State pricing policy on agricultural products.
- A sharp slowdown in the growth rate of aggregate capital investments into agriculture.
- Continued rapid gains in fertilizer production and use.
- A planned strong growth in output of grains and several major crops.
- Small gains in livestock output.
- Some slowdown in consumer income increases; substantial gains in farmer income; and stable retail prices on major foods.
- Little growth in consumption of lifestock products.
- An agreement to import large amounts of grain each year.

Goal progression. Now let's look at how the situation is shaping up for several of these goals.

Although the rate of growth in capital investments will slow down sharply for

agriculture, they won't slow as much as other investments in the economy. The lid will mainly be put on basic construction and machinery purchases. Building of livestock complexes and irrigation and drainage projects will likely surge ahead.

The Soviets are projecting a 17-percent boost in average monthly wages, but only a 5-percent increase in per capita consumption of meat, milk and dairy products, and eggs. However, these consumption goals seem lower than would be expected with such a rise in income.

Price lid. Retail price increases are apparently ruled out in the Plan, except as a last resort, although they could help alleviate another problem—the growing subsidization of meat and milk prices. Without price increases, these subsidies will probably grow, since production costs have been on the increase.

For example, during this current 5-Year Plan, average monthly wages of State farmworkers are slated to rise 22 percent, with collective farmer earnings going up 26 percent. Considerable gains in efficiency will be required, therefore, to hold down advancing costs.

Upped output. Overall, the Soviets are looking to a 16-percent increase in gross agricultural output during 1976-80—a not overly ambitious goal if the weather is favorable.

On the input side, the fertilizer supply seems sufficient for the crop targets. By 1980, the Soviets plan to up fertilizer use on grain to about 47 million tons, compared with only 27 million in 1975. Fertilizer use on forage crops and hay meadows is projected to double to 30 million tons. Total fertilizer use (including chemical feed additives) is set at 120 million tons in 1980, a 59-percent increase over 1975. And that's on the heels of a 65-percent hike from 1970-1975.

Grain target. The grain target may be attainable, but will require relatively favorable weather during the next 3 years. The record grain crop of 1976 bolstered prospects, but the 1977 shortfall has dimmed the earlier optimism.

Plans for some other crops, such as potatoes and sunflower seeds, seem ambitious, as do implied targets on many forage crops.

Livestock goals appear consistent with feed production possibilities, especially if the Soviets move toward more protein-efficient feed rations. However, a lag in forage crop production could dampen prospects somewhat. Still, expanded grain imports should be able to sustain growth in livestock output.

Grain/livestock picture. Now to zero in on the grain/livestock picture.

Soviet grain imports during 1977/78 are expected to reach roughly 20 million tons—nearly double the level of the previous year. And approximately 15 million of that will likely be from the U.S.

Requirements of grain for feed are expected to be up about 6 percent, with feeding rates again reaching the peak level of the previous year and livestock inventories continuing to increase. As of this January, cattle and poultry on farms had exceeded their year-earlier highs, and hog inventories were within 5 percent of the 1975 record.

With the increased feed demands, expected grain imports will probably not cover all requirements. Therefore, about half of the stocks built up during 1976/77 will most likely be used up. It follows then, that the estimated level of Soviet grain stocks is inadequate to cover a severe crop shortfall in 1978 without massive grain imports—and possibly some reverses in livestock expansion.

Elevator construction. Along these lines, during 1976-80, the government plans to construct grain elevators to store 30 million tons of off-farm grain. This move indicates some intended increase in grain stocks, although construction during 1976 and 1977 lagged noticeably behind plan. Additional stocks would give Soviet policymakers considerably more leeway in import and livestock inventory decisions in the event of poor harvests.

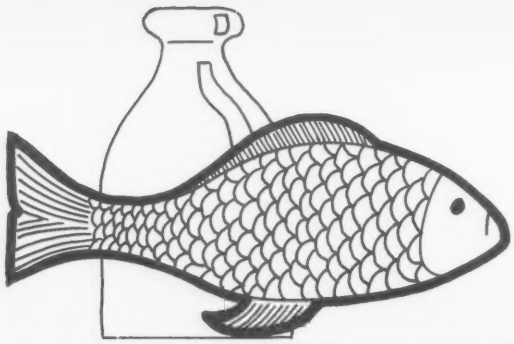
Soviet grain crops can fluctuate by more than 50 million tons between harvests, due mainly to weather. And the planned elevator capacity would enable reserves to cover only a portion of such variability.

U.S.S.R./U.S. agreement. The Soviet agreement to purchase at least 6 million tons of wheat and corn annually from our country for the 5 years beginning October 1976 offers several assurances to the Soviet leadership:

First and foremost is the guarantee of the availability of at least 6 million tons of grain yearly from the U.S. Another is the possibility of using these imports to build reserves. A third is the assurance of covering a portion of feed supplies if production goals fall short.

Such an agreement obviously places some constraints both on how much and from whom the Soviets import grain. Unless the U.S. share is increased at the expense of other grain exporters, minimum U.S.S.R. grain imports from all other countries will exceed 10 million tons annually during 1976-80—that is, if the current 5-Year Plan goals are met.

Market force. And Soviet grain purchases have been a major force on



world grain prices, since it entered the market in a big way 6 years ago. In fact, prices have tended to increase sharply each time the U.S.S.R. has bought large quantities of grain, thus reversing the traditional supply-demand relationship.

The U.S.S.R.'s export commitments are also a factor to consider. Traditionally, the country has been a major supplier of grain to Eastern Europe, particularly Poland, Czechoslovakia, and the German Democratic Republic. However, grain exports to these countries were cut sharply in 1976, with wheat exports curtailed completely.

The future of such exports is uncertain. They will likely depend more on Soviet supplies and East European needs and less on long-term commitments. Overall, though, they will likely be lower than in the past. The main Soviet bookings now total about a million tons of grain annually to Cuba and Asian centrally planned countries, primarily North Korea.

Into the future. Looking ahead, Soviet grain imports for the future, perhaps into the 1980's, seem likely to continue strong—typically in excess of 10 million tons—until grain stocks can be built up to more adequate levels. If two consecutive record production years permitted a large stocks buildup—35-40 million tons, for example—then Soviet grain trade patterns could be altered drastically. More likely though, grain production and imports will continue to fluctuate erratically, but imports generally will be large.

[Based on "Soviet Agriculture and Grain Trade in the 1976-80 Plan," paper by David M. Schoonover, Foreign Demand and Competition Division, presented at the Corporate Sponsor Seminar, Harvard University, on February 6.]

It's Not All Bread and Potatoes

The image of a Russian peasant eating only bread and potatoes has indeed faded into the past. Although following the devastation of World War II, the Soviet diet did sink to practically these two staples, marked improvements have been made.

In fact, the biggest change has been a decrease in carbohydrates such as potatoes and grain, and increases in all other foods. For example, the average Soviet ate over 530 pounds of potatoes and nearly 380 pounds (flour equivalent) of grain in 1950. By 1976, he had cut back to only 262 pounds of potatoes and 313 pounds of grain.

Animal products have become much more important in the national diet. Compare the following per capita figures:

- 57 pounds of meat and fat in 1950; 121 in 1976.
- 15 pounds of fish and products in 1950; nearly 41 in 1976.
- Almost 380 pounds of milk and products in 1950; 694 in 1976.
- 60 eggs in 1950; 206 in 1976.

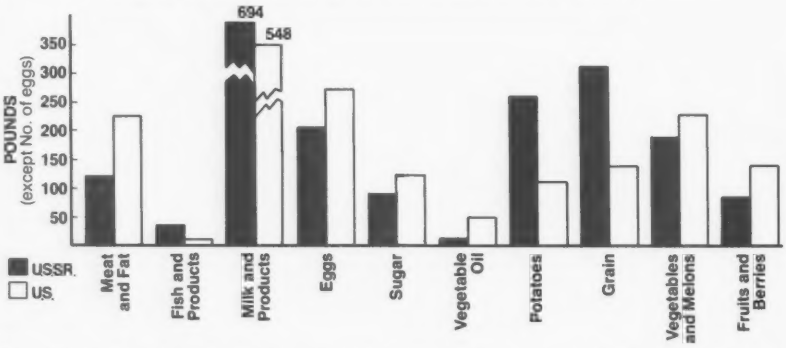
Some gains have also been made in vegetables and fruits. In 1976, the average annual diet contained nearly 190 pounds of vegetables and melons, a two-third increase from 1950. And fruits and berries topped 80 pounds, over 3 times the 1950 level.

And how does the current Soviet diet compare with ours here in America?

Overall, we eat more meat, eggs, sugar, vegetable oil, fruit, and vegetables than they do. And they top us in fish, milk and products, potatoes, and grain. See the graph below for a closer look.

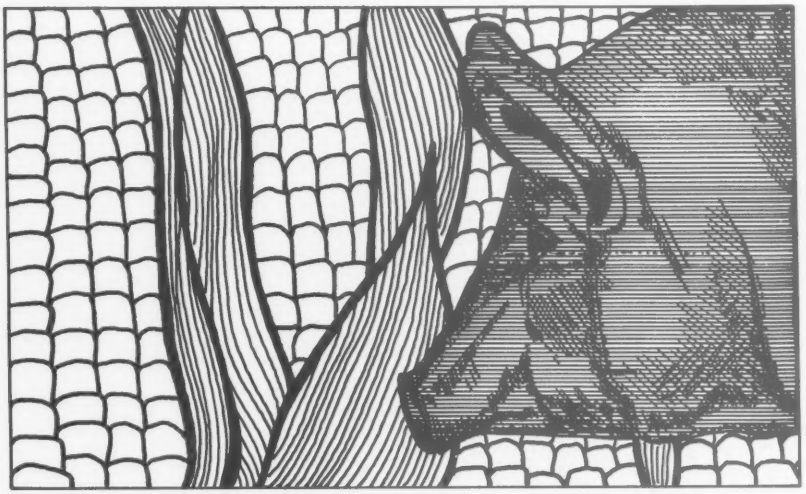
[Based on special material from Judith Goldich, Foreign Demand and Competition Division, and Allen Johnson, National Economic Analysis Division.]

Per Capita Food Consumption, U. S. and U.S.S.R., 1976



Note: The milk and products category is the milk equivalent; grain for the U.S.S.R. is the flour equivalent, for the U. S., the retail weight of flour and cereals; sugar for the U. S. also includes other sweeteners. U. S. categories on retail basis, except potatoes.

West German Grain and Mixed Feed Situation



As long as West Germans continue to consume more and more meat, their production of grain and mixed feed (a livestock feed made from various raw materials) will remain on the upswing.

Over the past 15 years, the land area planted to all grains in the country increased 8 percent, while the area planted to feed grains rose a whopping 36 percent—indicating the growing importance of grain as feed. Corn and barley showed the greatest increases in area planted to feed grains.

Grains are the major component in West Germany's expanding mixed feed industry. Oilcakes and meal, pulses, bran and middlings, tapioca, and meat and fish meals are some of the other ingredients.

Feed grains predominate. In 1975/76, 83 percent of the feed grains sold on the market in the country were purchased for mixed feed use—up from 61 percent in 1960/61. During this same period, the production of mixed feed nearly quadrupled—from 3.6 to 13.6 million tons.

West German farmers have come to rely so heavily on this feed that in 1974/75, expenditures for this item equalled more than a fourth of their total operating costs.

Although all types of animals are fed mixed feed, some get more than others. For example, in 1975/76, hogs were fed 37 percent of the total; cattle, 33 percent; and poultry, 27 percent.

Livestock numbers up. The expansion in the use of mixed feed has been accompanied by a sizable growth in livestock numbers. Over the past 15 years, cattle numbers (including dairy cows) increased 13 percent; hogs, 25 percent; and poultry, 47 percent.

In addition, greater use of mixed feed has contributed to improved feeding standards, which, in turn, have helped boost production efficiency per animal. The result: Since 1960, milk production per cow increased 21 percent, and egg production per layer shot up 52 percent.

Due in large part to a greater demand for meat—the result of rising income levels—it appears that the trend of increasing West German mixed feed use will continue.

Major components. Grains and oilseeds are the major components of mixed feed (in 1974/75, grains made up 37 percent and oilseeds, 30 percent, of the total ingredients).

Since 1960, American grain exports to West Germany have more than doubled, with corn being by far the leading item. For instance, in 1976/77, corn made up more than three-fourths of West Germany's grain imports from the U.S., and American farmers supplied the country with about 90 percent of its total corn imports.

Corn is mainly used in poultry and swine feed. While the corn component of poultry rations is fairly stable and expected to remain so, swine feed components are much more flexible, with corn, barley, and wheat generally substitutable for one another.

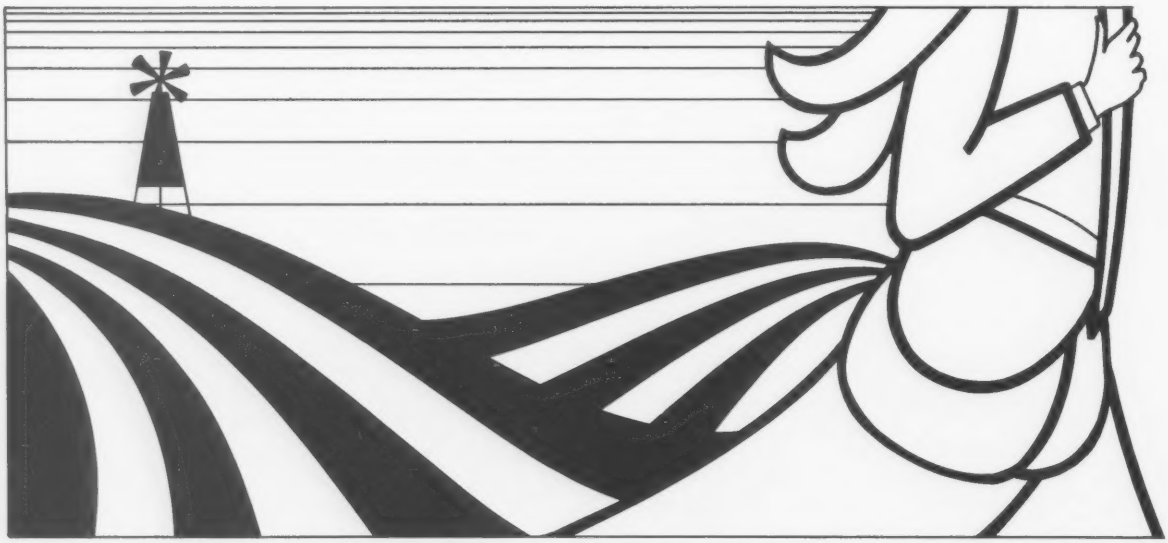
Swine feed. Since swine feeding uses 60 percent of all grain used in feed, the level of corn utilization is of critical importance to American corn farmers. The expanding production and use of soft wheat for feed through the European Economic Community (EC) could mean increasing competition for the U.S.

As for oilseeds, the U.S. supplied nearly three-fourths of West Germany's total soybean imports in 1976/77, including half of the soybean meal.

With regard to oilseeds' use in mixed feed, it seems highly unlikely that West Germany's demand will diminish under the EC's present agricultural policies.

[Based on special material from Kathryn Kayser, Foreign Demand and Competition Division.]

Labor Force Facts About Rural Women



Today, more and more women are entering the labor force—assuming roles and occupations formerly held by men only.

Since 1940, the number of women in the labor force has nearly tripled, from 14 to 39 million. Meanwhile, the proportion of the total female population—age 16 and over— in the labor force has risen from 28 to 47 percent.

Such gains have inspired substantial research on the absolute increase in female labor force participation, and the components of its change both by age and marital status. Yet, little attention has been given to the differences in labor force behavior between metropolitan and nonmetropolitan women.

Inaccuracies. General statements which depict conditions in more urban locations may be inaccurate for rural areas. For instance, a recent article on women in the work force by the Population Reference Bureau claimed that over the past quarter century, women's participation in the labor force has continued to increase steadily, despite several short-term cyclical pauses.

"The most recent recession (1973-75) was atypical, however," the article stated, "in that instead of halting all growth as in previous recessions, the number and proportion of women in the labor force continued to rise dramatically, outpacing the substantial gains in the female population."

Volatile situation. While this description applied to metro areas, the situation in nonmetro areas was more volatile, fluctuating adversely with the economic conditions of the 1973-75 recession.

In fact, while increasing over time, the rate of labor force participation of nonmetro women—representing nearly a third of the total female labor force—was consistently lower than that of their more urban counterparts.

For instance, from 1960 to 1970, the rate of female labor force participation increased from about 36 to 41 percent in metro areas and from 30 to 36 percent in nonmetro areas. More recent data show that by 1976, female labor force participation reached about 48 percent in metro areas and 45 percent in nonmetro areas—indicating a closing of the gap.

Farm employment. Another misconception in studying the labor force participation of nonmetro women is equating the term "nonmetro" and "rural" with "farm." While it is interesting to examine the changing role of women on farms, it must be noted that agriculture provides employment for less than 3 percent of the nonmetro female labor force.

What are some of the reasons behind the surge of nonmetropolitan women into the labor force? The big three include economic considerations, changing attitudes toward marriage and

childbearing, and increased employment opportunities due to industrialization.

Other contributing factors are satisfaction derived from work outside the home, rising levels of education, marital status, level of spouse's income, increases in divorce, and the greater acceptance of women as workers.

The big boon. But it was industrialization that provided the big boon for nonmetropolitan women who wanted to work outside the home. After World War II, many rural residents migrated to urban centers in search of employment; those who remained became a pool of available, low-wage labor, attractive to other industries.

From 1962 to 1969, half of all nonmetro job growth was in manufacturing. This influx of manufacturing industries provided the impetus for auxiliary, support industries to move to rural areas to provide services to both manufacturing plants and their employees, thus multiplying employment opportunities.

From 1960 to 1970, the labor force in nonmetro areas grew by almost 2 million; women were responsible for almost 94 percent of this growth. In comparison, only 60 percent of the growth in the labor force in metro areas was attributed to women.

Hidden information. While such high participation rates sound great, they fail to reveal anything about the kinds and quality of jobs females seek, their success in obtaining employment, and their attachment to the labor force.

In fact, they mask the incidence of concentration in lower skilled, lower paying, secondary jobs, and the facts that female unemployment rates are much higher than those for males and that women are more likely to lose their jobs or have their hours cut back during recessions.

During the 10-year period (1960-70), more than 80 percent of the female job growth in nonmetro areas occurred in three occupational groups: clerical, service, and operative (factory worker). Less than 18 percent was in professional and managerial occupations, compared with 24 percent in metro areas. For both areas, the highest percentages of female growth were in clerical jobs.

Job advancement and wages. The types of jobs which women are entering in nonmetro areas have implications for their job advancement and wages—some clerical and many operative occupations are often thought of as "dead end" secondary jobs which provide little advancement potential. And a greater proportion of nonmetro than metro women are in such job categories.

From 1970 to 1974, the mean earnings of employed nonmetro women declined by $197, compared with a $154 decline for urban women. During this same period, earnings for nonmetro males actually increased by $354, while earnings for metro males decreased by $19, still considerably less than the decrease experienced by metro women. In 1974, the mean earnings for nonmetro women were only $3,952—44 percent of the level for men.

Part-time employment. Lower earnings and higher concentration in secondary jobs may be further explained by the availability of part-time employment in these occupations. There is relatively little difference in the number of women seeking part-time jobs in metro and nonmetro areas, although the nonmetro rate is slightly higher.

However, of all the women actually employed, nearly 31 percent of nonmetro and about 26 percent of metro women are on part-time schedules—a greater percentage of nonmetro women have been given reduced working hours due to economic conditions.

Casual work. Besides casual work (dropping in and out of the labor force at various times of the year with no firm commitment to one particular job, such as seasonal farmwork), the types of jobs which nonmetro women are taking have further implications for the steadiness of employment, particularly during adverse business conditions.

For example, as recessionary pressures mounted from the fourth quarter of 1974 to the first quarter of 1975, total employment in nonmetro areas declined by about 1.4 million, with women making up about 40 percent of the decline.

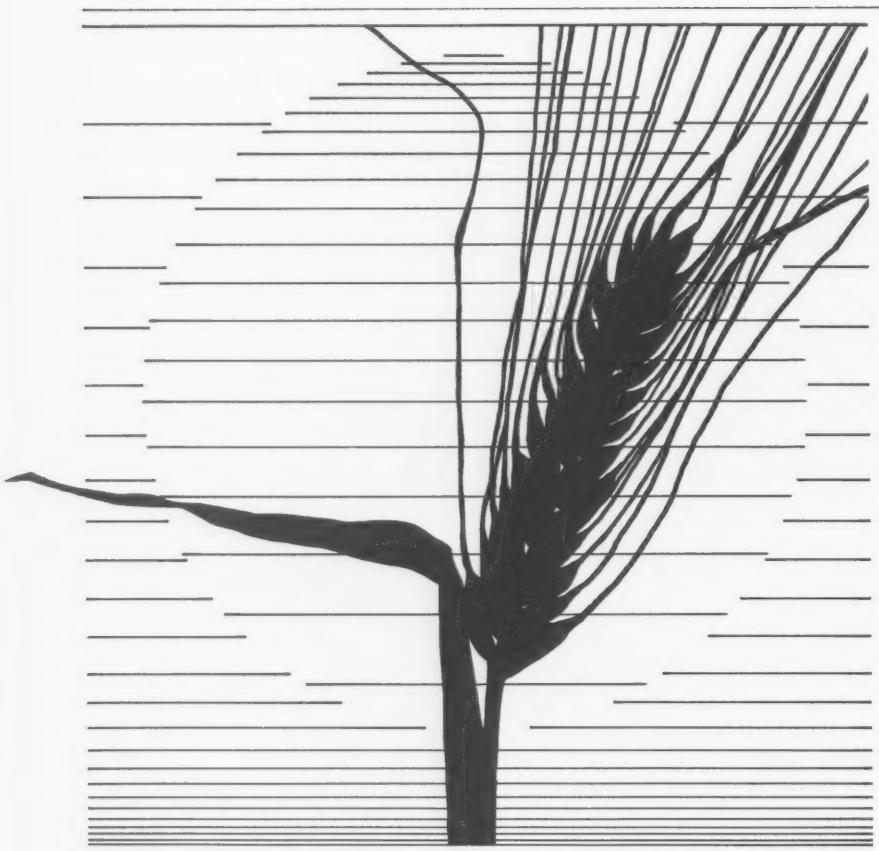
The unemployment rate for nonmetro women—traditionally higher than that of men—climbed from 7 to nearly 11 percent, while the rate for men increased from about 4 to 8 percent.

Dropouts. At the same time, a greater number of women dropped out of the labor force than did men; twice as many women as men indicated that they dropped out because they were unable to find jobs.

However, on the bright side, the increased labor force participation by nonmetro women has contributed to higher family incomes and has provided women with some measure of financial independence and self-fulfillment outside the home.

[Based on the manuscript, "Labor Force Characteristics of Nonmetropolitan Women," by Jeanne M. O'Leary, Economic Development Division.]

The Sun Shines On Grain Drying



Researchers may be about ready to turn the corner in the quest for an economically feasible solar grain drying system.

Economists say installation of such systems, to replace those that use fossil fuels or electric power, may be a good move for some farmers now. These are farmers who need replacement dryers and live in areas with plenty of sunshine and high energy costs.

Other farmers who dry grain may want to wait a few years, until it's clear whether solar units will become more affordable and until their present equipment needs replacing.

Also, researchers continue to look for "multi-use" systems—those that can be used for more than just drying grain 2 months out of the year. The ability to use the unit all year, in effect, slashes its cost by increasing its value.

Many options. Numerous solar systems are available to farmers, each with its own advantages and costs. Of eight systems studied (rock-heat storage, flat plate, inflated tube, suspended plate, wraparound, intensifier, air-supported, and multi-use) the least expensive was the wraparound system, at 10.3 cents per bushel. Conventional dryers cost in the range of 12-15 cents. The intensifier was the most expensive to use, costing an estimated 33.5 cents per bushel of grain dried for the system.

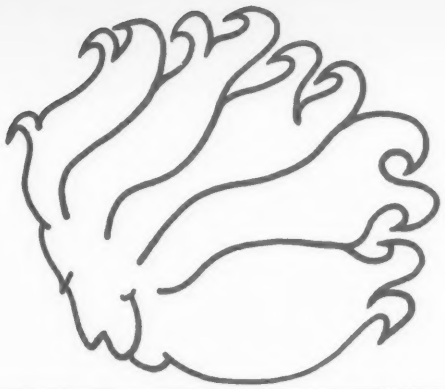
The wraparound system—like the air-supported and multi-use systems—is commercially made. The wraparound collectors attach to the wall of a circular grain bin, and heat is forced through the grain by electric fans.

The intensifier, as the name implies, intensifies the solar rays by reflecting them from a concave surface to the collector. Such concentration causes greater heat buildup than a plain collector surface.

Experimental costs. The higher costs for the intensifier are the result of greater depreciation and higher interest on investment, the natural result of a relatively high initial cost for the experimental model—$2,500 (total system cost). Although only three of the units studied were available commercially last year, more store-bought systems are on the way and will hit the market as demand shows itself.

Farmers who "go solar" often build their own sun collectors. Homemade versions of solar collectors cost considerably less than commercial units—$1-2 per square foot of collector area, as opposed to $3-6—and farmers usually find the materials they need for construction at hand.

However, one note of caution: Homemade systems normally don't last as long as commercial systems.



Low heat. One factor limiting the value of solar systems is their relatively low heat, so drying time is somewhat longer than with conventional dryers.

Also, in many units supplemental heat is required—often in the form of electric heaters—for use during inclement weather and at night. Operating costs for these systems are boosted because of the cost for electricity for the heaters, added to the normal cost of operating electric fans.

For many of the solar systems, savings over conventional liquid propane (LP) dryers can be substantial—even though current cost estimates don't always reflect a savings.

Substantial savings. For example, use of the flat plate collector might cost 17 cents a bushel of grain dried to bring moisture content down by 9 percent, a storable level. Operating a continuous flow LP dryer might cost 15 cents a bushel to do the same job, and an automatic batch LP dryer might dent the budget by a mere 12 cents a bushel.

But serious factors in the estimates cloud the picture. For one thing—and perhaps it's the most important—the cost estimates are using 1976 prices, and the costs of solar units will probably drop when mass production becomes feasible.

The flat plate collector, for instance, was estimated to cost $1,900 to build in 1976. If solar grain dryers catch on with farmers, mass production could drive that cost to less than $1,500 (at present dollar values), as the units become more available.

Rising LP costs. Besides, LP costs can only go up in the future as supplies become tighter. But solar energy, by itself, costs nothing, and with prices of the collectors sliding, farmers stand to save cash.

These savings can add up over a year. The most startling savings of the eight units studied came from the flat plate collector.

A farmer could have saved $559 in 1976 if a flat plate collector had been used instead of an all-electric system to remove 30,000 pounds of water from 5,000 bushels of wet grain. That flat plate unit would have saved $127 over LP dryer costs, and $50 over natural gas costs.

Mixed returns. Not all savings were that striking. An intensifier's cost would have been $469 less than all-electric, removing 23,400 pounds from 1,400 bushels of wet grain, $107 less than LP, and $46 less than natural gas. An air-supported system would have chopped costs for removal of 25,000 pounds of water from 8,000 bushels by $85, $19, and $8.

But the savings is only part of the story. Most experts agree we are fast running short of fossil fuels, and conservation of them has been urged. The solar units help accomplish energy management goals by slashing the amount of fossil fuels consumed. (Most electric generating stations are powered by fossil fuels.)

The ability of farmers to adapt solar grain dryers for other uses will also probably result in dollar savings. For example, some farmers who have solar units are using them to heat small work spaces and to ventilate animal shelters during times when grain drying isn't underway.

[Based on *The Performance and Economic Feasibility of Solar Grain Drying*, by Walter G. Heid, Commodity Economics Division.]

Electric Costs On the Farm

Farmers won't be surprised to learn they paid more for electricity last year than they did the year before.

Nationwide, monthly bills increased 10 percent in 1977. In some States, monthly boosts were considerably higher than in others.

In Arizona, for instance, the average farm monthly electric bill leaped from $135 in 1976 to $168 last year. California farms averaged $176 a month for electricity in 1976 and $197 last year—the highest farm electric bill of any State.

In a few States, farm electric bills shrank in 1977. In Wyoming, where farmers paid an average $43.80 a month in 1976, the bills were eased down to $39.20 last year, as consumption declines more than offset rate increases.

Tennessee farm electric bills slipped from $26 two years ago to $25.50—the Nation's lowest—in 1977.

The largest decrease in the monthly bill was in Idaho, where consumption dropped sharply and the bill averaged $62.50, a drop of $12.50 from a year earlier.

Farmers generally did a good job curtailing their electric use, holding the increase to a tiny 4-kilowatt-hours (kwh) average per month—1,307 in 1976 *vs.* 1,311 last year.

Higher bills were largely the result of increased electric rates. Nationwide, rates spurted 10 percent, to average 3.7 cents per kwh in 1977.

[Based on *Agricultural Prices*, October 1977, by the Crop Reporting Board.]

Grain Reserves:

Storing America's "Amber Waves of Grain"

By removing more than a billion bushels of grains from the market, USDA intends to strengthen farmers' prices, while building a cushion against inflation and hunger, and future export embargoes.

In a nutshell, that's what the farmer-owned Grain Reserve Program is all about.

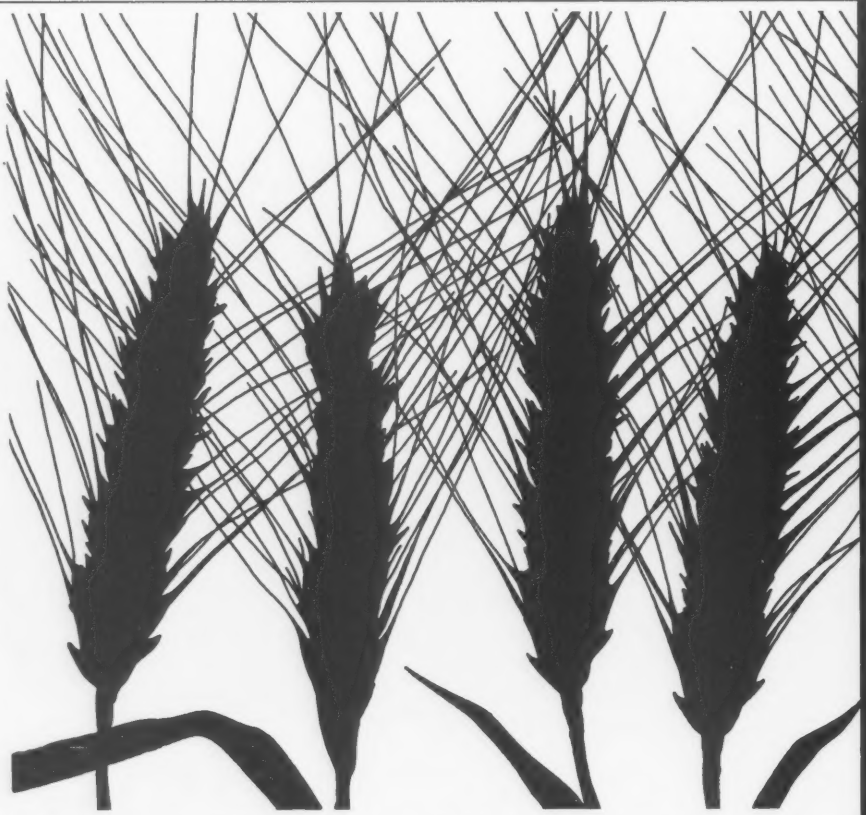
After successive bumper harvests for the past 2 years—combined with a strong world grain harvest, U.S. farmers find themselves in a market where supply far outstrips demand. Furthermore, the low prices they're getting are on a collision course with rising production costs.

Program aims. The grain reserve program, established by Secretary Bergland in April under existing authority and buttressed by the Food and Agriculture Act of 1977, seeks to remove 330 million bushels of wheat and 670 million bushels (corn equivalent) of corn, sorghum, barley, and oats from the market to:

- Strengthen current market prices. By reducing the supply available for sale, the market should adjust upward.
- Serve as a hedge against the inflationary effects of a poor crop in the future.
- Be available for meeting emergency needs in the future.

The program, which is administered by the Agricultural Stabilization and Conservation Service, leaves the grain under the control of producers while sharing the cost of storage by providing advanced storage payments.

New incentives. To encourage producers to take advantage of the program, Secretary Bergland recently revised the program to offer these provisions:



- Farmers may participate immediately, without having to wait for loan maturity or purchase agreement expiration, with the exception of 1977-crop corn and sorghum.
- The Commodity Credit Corporation will make advance storage payment at 20 cents per bushel for corn, wheat, barley, and sorghum; and 15 cents a bushel for oats.
- Both 1976 and 1977-crop wheat and feed grains are eligible.
- Reserve loan interest charges to the farmer are set at 6 percent.
- Storage facility loan capacity limit is increased.
- Rotation and substitution of grains are allowed.

Farmers' commitment. If farmers choose to use the reserve, they agree to leave the grain in storage until the 3-year agreement expires or until "release levels" are reached, at which point the grain can be taken out without penalty. The release levels are reached when prices rise to 140 percent of loan for wheat, and 125 percent for feed grains.

Farmers may elect to leave the grains in storage even longer, until prices reach 175 percent of the wheat loan level, and 140 percent of feed grain loans. When this occurs, the "call level" is reached, and the Commodity Credit Corporation requires farmers to redeem their grain.

The Government's advance payment of storage costs isn't intended to offer profit for storage. Instead, it should cover a portion of storage costs to the producers.

Penalty set. To ensure effectiveness, the program also includes a penalty for early redemption—before 3 years or before prices reach release levels. The farmer, in that instance, must repay all storage payments, plus interest on these payments, as well as the original loan principal and interest. The repayment must total at least 140 percent for wheat or 125 percent for feed grains of the farmer's current loan rate times the quantity redeemed.

While the benefits to farmers may be crucial in this period of depressed grain prices, equally important benefits can be realized by other inflation-conscious citizens, and by people around the world who depend on U.S. farmers for a reliable food supply.

The wisdom of stockpiling supplies for leaner times has been appreciated throughout history. Both economic and nutritional disasters have occurred over the years when after poor weather or other natural adversities, enough food simply hasn't been available.

In the beginning. Grain reserves are hardly new, dating back at least to the Old Testament time when Joseph convinced the Egyptian pharoah to store excess production in good years to use in times of scarcity. The idea has modern-day applications.

In the 1965-66 marketing year, poor harvests in Russia and India diminished world grain stocks by about 27 million tons. Despite the huge drop, prices and trade weren't affected seriously.

Yet, 7 years later another stock drawdown—41 million tons—was triggered by poor Soviet harvest. And, following the 1972-73 shortfall, prices soared, trade patterns were shaken, and food aid shipments declined.

Depleted stocks. The difference was far more than a matter of 14 million tons of grain. After a period of acreage reduction and higher demand in the early 1970's, world grain reserves at the beginning of the 1972-73 marketing year were about the same as at the end of the 1965-66 period—after that shortfall.

The system simply didn't have enough reserves to absorb the shock of the unexpected depletions.

Among the apparent casualties of the shortfall was the theory that farmers and traders alone could handle the need for grain reserves as they reacted to market conditions.

It became apparent that market conditions, which emphasize the present and not the future, can handle normal ebbs and flows. But they don't encourage sufficient long-range cushioning against unpredictable extremes. And they don't offer the long-term stability needed for orderly economic growth.

Shock absorber. The reserve system, acting to complement market movements, will act as a shock absorber, taking commodities out of the market during abundance and returning them during shortages. It also ensures dependable supplies and, thus, shores up U.S. foreign trade by removing fears of future embargoes induced by stock depletions.

Foreign trade is a vital area for today's farmers, since they receive about a fourth of their cash receipts from exports. The U.S. accounts for 40 percent of the world's wheat exports, better than half of coarse grain exports, and three-fourths of soybean exports.

To the world's hungry, the U.S. offers an even more impressive statistic: 60 percent of all the world's food aid.

Export problems. In the wake of the 1972 grain sales to the Soviets and the

spate of poor weather and heavy demand worldwide, the prospect of shortages at home spurred some holdbacks in exports. These governmental actions strained trading relationships and caused such longtime trading partners as Japan to begin to look elsewhere for suppliers.

Embargoes also upset farmers who contended that they cut prices deeply.

The grain shortfalls had still another impact: livestock, dairy, and poultry farmers—all of whom must have steady supplies of reasonable priced feed grains—were hard-pressed by the shortage and price increases which, in turn, caused their balance sheets to turn red.

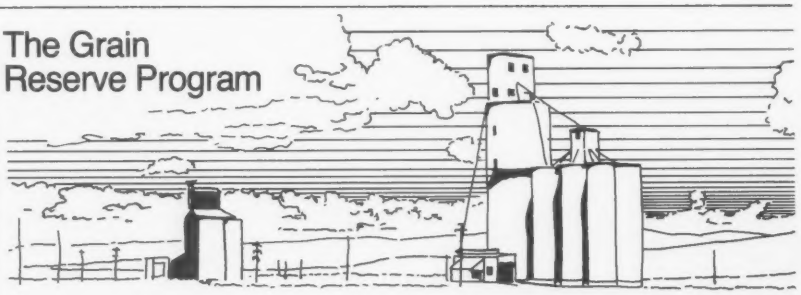
Food price hikes, in turn, contributed to disastrous double-digit inflation, as the prices paid to grain farmers snowballed through the food delivery system. This inflation brought damage to farmers that remains to plague them. Consumers fared no better, as the inadequate stocks left them prey to the whims of the market—and to skyrocketing prices for food.

Guarantees needed. While the market finally settled after 1975, the need for some guarantee against the effect of another similar round of shortfalls still remains, unless there is a reserve in place.

Much of the uncertainty centers on the weather—cause of the most radical variations in supply. Since weather can't be controlled, the alternative is to build a cushion to absorb the worst effects of a bad year—a cushion in the form of grain reserves. And this program makes it possible for farmers to reap the benefits.

[Based on special material provided by David Brewster, National Economic Analysis Division, and by the Agricultural Stabilization and Conservation Service.]

The Grain Reserve Program



Eligible Commodities: Farmer-owned 1976 and 1977 wheat, corn, sorghum, barley, or oats, including those commodities which are under Commodity Credit Corporation loan or purchase agreement.

Participation: Effective March 1, 1978—no waiting for loan maturity or purchase agreement expiration. Exception: Immediate program entry for 1977-crop corn and sorghum will be announced later.

Maturity: The length of the reserve loan is 3 years.

Storage payments: CCC will make advance storage payments to producers annually. For warehouse-stored grain, producers are required to furnish proof they have provided for storage for at least 1 year. The annual rate is 25 cents/bushel for barley, corn, wheat, and sorghum, and 19 cents/bushel for oats.

Release level: When the national average market price reaches 125 percent of the then current national average loan rate for feed grains or 140 percent of the then current national average loan rate for wheat, the producer may redeem the reserve loan without penalty.

Call level: When the national average market price for feed grains reaches 140 percent of the then national average loan rate for feed grains or 175 percent of the then current national average loan rate for wheat, reserve loans will be called. The producer has 30 days after the call to redeem the reserve loan or forfeit the grain to CCC.

Rotation of farm-stored commodities: With approval, producers will be permitted to substitute stocks to maintain quality.

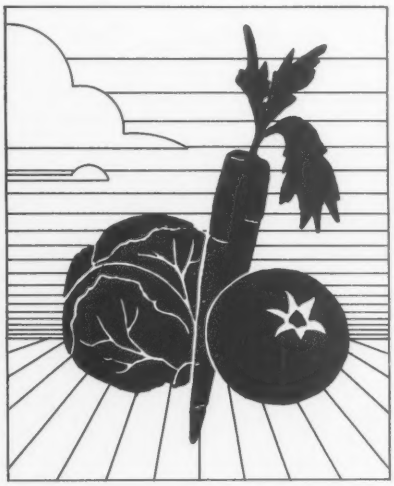
Penalty for early redemption: The farmer must repay all storage payments, plus interest on these payments, in addition to the original loan principal and interest. However, the repayment amount must total at least 140 percent (for wheat) or 125 percent (for feed grains) of the farmer's current loan rate times the quantity redeemed.

Goals: The national goals are approximately 330 million bushels of wheat and 670 million bushels (corn equivalent) of corn, sorghum, barley, and oats. The reserve program is offered on a first-come, first-served basis.

Reserve loan interest: Interest charges are 6 percent.

Farm storage facility loan: Reserve participants may qualify for increased amounts of storage.

Fresh Vegetables Back to the Kitchen



A turnaround is underway in vegetable eating in the U.S., as people slowly change their eating habits back toward fresh products.

Ever since the 1940's, consumption of fresh vegetables has given ground to processed. But the downtrend in fresh use seems to have been checked since reaching a low of 96 pounds per capita in 1972. In most years since then, per capita consumption gains have been small but steady.

For 1976, Americans ate 100 pounds of fresh vegetables each; that compares with 102 pounds of canned, and 20 pounds of frozen.

For 1977, a slight dip happened in per capita fresh use. That's because of the disastrous Florida freeze in January 1977, and the California drought.

Weather problems. Between them, the weather extremes robbed producers of perhaps 1.5 percent of output, for total production of 246 million cwt. (not counting potatoes or sweet potatoes). Final figures showed 1977 production almost as great as 1976, despite the freeze and the need to shift some California crops to fields with more water.

And, short vegetable supplies rein in consumption by forcing prices up. Some of the decrease in 1977 was made up in the marketplace by boosted imports of fresh vegetables from Mexico, and the Florida losses were nearly offset by jumps in production in other parts of the country. These areas made fall 1977 output larger than the year before.

Why so popular? The new-found popularity of fresh vegetables has its roots in changed eating habits, often with a thread of health-consciousness running through the menu changes.

Most nutritionists concur we take in too many calories, and vegetables generally provide fewer calories (when they're consumed in moderation) than equal amounts of meat.

Fewer calories in a tasty dish is why many people have turned increasingly to salads. In fact, most of the gains in fresh vegetable consumption can be traced to them.

Salad bars in restaurants are now commonplace, although only a few years ago they were novelties. With them, and with more salads gracing the dinner tables in homes, consumption of vegetables normally eaten raw, such as lettuce, tomatoes, peppers, cucumbers, and celery, has moved up steadily.

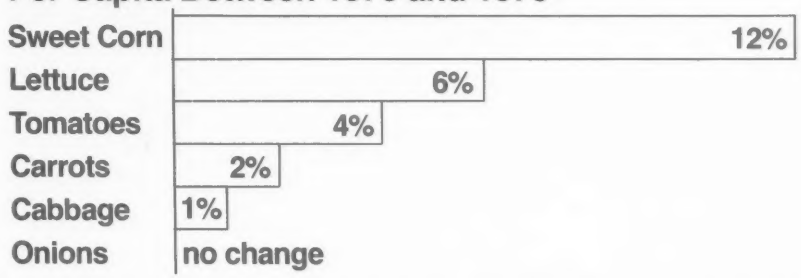
Two-way vegetables. Those vegetables that can "go both ways"—commonly eaten raw or cooked—just barely gained a tenth of a pound each during 1970-76. Among this type are cabbage, carrots, and onions.

Meanwhile, consumption of sweet potatoes, peas, lima beans, and other relatively high-calorie vegetables has slipped. People have shied from them in favor of dieters' delights, such as the salad vegetables, cauliflower, broccoli, and snap beans.

All told, the market prognosis for fresh vegetables is healthy. Continued gains depend somewhat on the general national economy, but if the economy stays well it's expected that fresh vegetable demand and consumption will also thrive.

[Based on "What's Happening in Vegetable Use Today," by Charles Porter, Commodity Economics Division, for *American Vegetable Grower* magazine.]

Changes in Fresh Vegetable Consumption Per Capita Between 1970 and 1976



Finding "Interest" in Food Stamp Redemption

Efforts to make the Food Stamp Program more efficient may be bolstered by an ESCS study that offers statistical models to assess the food coupon redemption process.

Results of the analysis are now being used by food stamp program administrators to streamline budget operations and improve the accuracy with which appropriated program funds are transferred to the food stamp redemption account—both may potentially save taxpayers millions of dollars. The study was requested by USDA's Food and Nutrition Service (FNS).

The coupon redemption process begins with the coupon issuance and ends in the transfer of funds from the FNS "appropriations" account to the "redemption" account they have with the Treasury Department to cover the Government's food coupon liability.

The "appropriations" represents only a line of credit or a Congressional authorization to spend. No payments are made until the transfer of funds is made.

Crucial timing. Timing of the transfer is crucial since an interest liability would occur to the extent the Government had to borrow money used to keep up the "redemption" account.

The study results show that if the models developed in the research had been available in the past year, the size of the monthly balance in that active redemption account could have been reduced to about 25 percent of monthly redemptions.

A balance of that magnitude would have been sufficient to cover the wide

variations in monthly requests for coupon redemptions the Federal Reserve Banks make to the Treasury. And, funds released by the reduction in this balance would have been available for meeting other Government obligations.

Key questions. By focusing on two crucial questions often asked by policymakers, the study examined the coupon redemption process:

1. What has been the extent of coupon loss—or nonuse—over the history of the program?

2. What is the lag structure involved in the coupon redemption process?

Both questions have a critical bearing on a major decision that FNS officials must make: How much money should be maintained in the coupon redemption account to ensure that monthly obligations are met?

The problem is akin to that of individuals who maintain both checking and savings accounts. Their management problem is to maximize the amount of money in the savings account (the one earning interest) while keeping enough money in the checking account to cover the incoming stream of bills.

The balance. For FNS the problem is to keep sufficient funds in the redemption account (its "checking" account) to fully support the value of monthly food stamp redemptions while minimizing the withdrawal of funds from the food stamp appropriation account (its "savings" account).

The decision involves multimillion-dollar ramifications, since every dollar in excess of the monthly need represents a cost to taxpayers.

Just keeping up with stamp issuance on a monthly basis was difficult in the early years of the program. But now a sophisticated computerized system is helping to do that job better. Until the ESCS study, however, little information was available to verify how closely the actual redemptions were related to stamp issuance on a monthly basis.

High percentage used. In addressing the first question concerning coupon loss or nonuse, researchers found that about $230 million in coupons issued since 1970 have not yet been presented for payment. While this is a substantial amount of money, it constitutes less than 1 percent of the value of all stamps issued.

The stamp loss problem, therefore, appears to be of minimal importance, particularly since FNS must maintain funds to pay for those lost or unused coupons in the event they are later redeemed.

The second question, concerning lag structure, is far more important.

Basically, the lag structure—the time that elapses from date of issuance to date of redemption of coupons by the Treasury—most commonly stretches over the period of 2 months.

Tracing redemptions. Statistical testing of alternative lag structures traced the path of the coupon redemption process. It showed that recipients tend to spend the full value of their food stamps in the month they are issued.

For every dollar issued, the full $1 makes its way through the hands of grocery stores to local banks. Of this $1 that the local banks redeem, 65 cents makes it all the way to final redemption at the Treasury during the current month of issuance.

The reporting of an additional 33 cents in final redemptions is delayed until the following month due to lags in the banking system. The ESCS researchers also found that the number of banking days in a month affected coupon redemption. The more banking days there were the more stamps were actually redeemed.

Banks move quickly. On the other hand, the cash collected from food stamp purchasers takes only about a month to wind through the banking system to reach the FNS food stamp account. This deposit creates a portion of the funds by which redemptions are paid.

The difference between the value of redemptions and cash deposits is the Government's payment liability. With the elimination of the purchase requirement in 1978, such cash deposits will no longer be a source of funds. But the total number of stamps issued will be reduced as well.

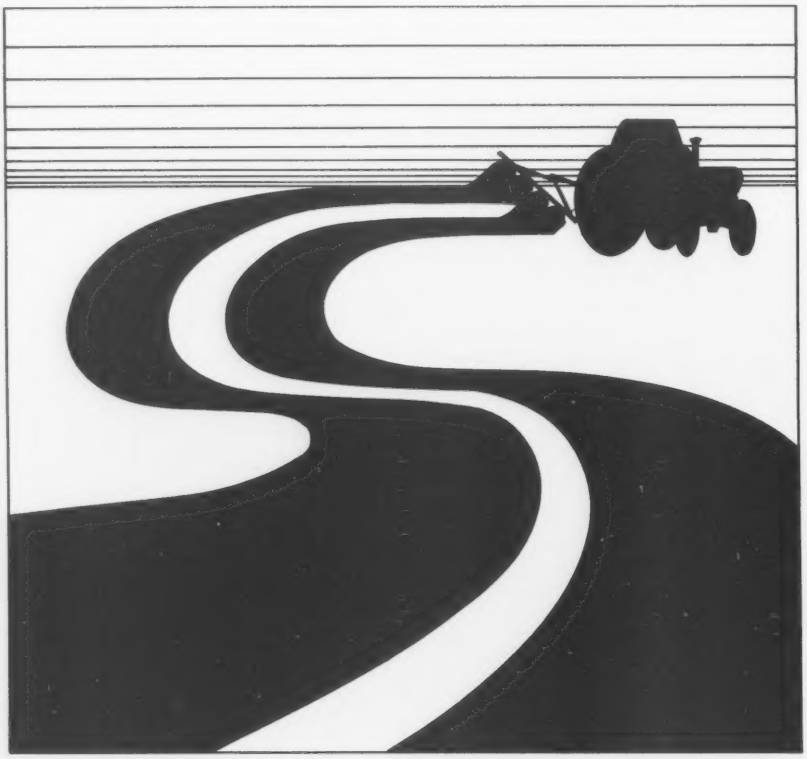
That is, when program participants had to purchase a portion of their stamps, the money collected from these purchases could be used to cover part of total stamp liability. When this cash is no longer available, forecasting the amount of money needed to be kept in the redemptions account will become even more important.

Growth complications. Earlier attempts to get a firm grip on the coupon redemption process were complicated by the very rapid growth of the program since its inception in 1964.

Less than 8 years ago, only $135 million in coupons were issued to about 7 million participants. In 1976, participation finally stabilized at 17 million Americans who received about $700 million worth of coupons each month.

[Based on the report, "Food Stamp Redemptions: Forecasting the Government's Liability," by William T. Boehm, Michael Belongia, and Masao Matsumoto, National Economic Analysis Division.]

Plowing Capital Into America



Since the turn of the 20th century, a $50-billion capital investment has been plowed into U.S. agriculture's natural resource conservation and development in an unheralded, steady attempt to harness our land and water resources. The $50 billion was measured in "real" or constant dollar terms to account for changing values of the dollar. The historical dollar total to 1975 was $27.5 billion.

While the main components of the effort—irrigation, drainage, and conservation (IDC)—have drawn generous attention over the years, the vital importance of natural resource capital in American agriculture has been largely overlooked.

ESCS study. According to an ESCS study measuring the aggregate importance for the first time, IDC capital investments now represent about one-fourth of all fixed nonland capital in agriculture.

In fact, since 1965, IDC totals have exceeded the net value of farm homes.

In 1975, America's net value of investments in agricultural natural resources (using constant or 1972 dollars) included: $12.3 billion for irrigation (45 percent), $9.7 billion for conservation (35 percent), and $5.5 billion for drainage (20 percent). This means that in 1975, the accumulated value of IDC (investments after depreciation) was $27.5 billion. An interim estimated net value for 1977 was $27.9 billion.

New perspective. While Americans have long been aware that substantial investments have been made in each of the IDC components, the compilation of figures into a single, massive input category offers a new perspective on the Nation's commitment to agriculture—a perspective that thrusts natural resource inputs into equal status with traditional input categories, such as labor, land, and machinery.

The compilaton of natural resource investments offers policymakers as well as researchers a practical tool in analyzing the benefits of such investments.

While this grouping of farm capital is still new, the raw statistics immediately reveal a potentially troublesome trend that may require attention from policymakers.

Capital investments. The net value of capital investments in soil conservaton and drainage has actually declined in recent years, indicating that those vital facilities may now be less than totally effective in accomplishing their purposes.

While this study has revealed some hitherto unresearched aspects of the capital base of American agriculture, it should be remembered that resource conservation and development programs involve much more than capital investments as such.

Also, even capital investment itself has many facets meriting research study, such as sources of financing, related tax considerations, impacts on real estate values, and income distribution, particularly when cost-sharing is involved.

Actual expenditures. An Initial Report Team study recently made for the Senate Agriculture Committee, involving all USDA agencies concerned with conservation programs, shows the following total expenditures (actual dollars) since 1935 for USDA conservation-related activities: cost-sharing ($13.7 billion), technical assistance ($3.6 billion), resource management ($2.3 billion), loan programs ($635 million), research ($445 million), and education ($75 million).

In a historical perspective, drainage and irrigation played a vital role in U.S. agricultural expansion through most of the 19th century. By 1920, they began to overshadow land clearing as the primary means for developing agricultural land.

Soil and water conservation investments were but a trickle until the 1930's, but then they mushroomed in importance during the Depression years and continued at high levels until about 1950.

Investment growth. Total IDC investments have grown dramatically, especially in the last half-century. As late as 1930, they were valued at $6 billion in 1972 dollars. By 1945, that total had more than doubled to $15 billion—a little more than half of today's net value.

The expression of all values in constant (1972) dollars was necessary to recognize that, because of inflation, $1 today buys much less conservation and development than it did in years past.

Meanwhile, the relative value of IDC, as a fraction of all fixed agricultural capital, increased from a mere 4.4 percent in 1900, to 9.4 percent in 1930, to 34.7 percent in 1975.

A substantial share of the IDC development effort has been financed by the Federal Government, either by direct construction, as in irrigation projects built by the Bureau of Reclamation in the Interior Department, or by indirect cost-sharing programs administered by USDA.

Federal financing. The Federal Government has picked up the tab for slightly more than half of all irrigation and soil and water conservation facilities, and for about 8 percent of drainage investment costs.

For many years, the IDC programs have been justified as contributing to national and regional economic development and preserving natural resources in a productive state for future generations of our citizens.

More than two-thirds of the value of management facilities, whether for irrigation or drainage, was represented by group-project and off-farm works. On the other hand, soil conservation efforts largely depend on individual farmers or on "pooling" arrangements among several farms.

A long-term general trend toward increasing natural resource capital investments in reality represents a balance between the recently decreasing drainage and soil conservation investments, offset by a very strong emphasis on irrigation.

Declines noted. While the net value of irrigation investments increased by $342 million from 1975 to 1977 (in 1972 dollars), drainage and conservation improvements have declined in value, and possibly in effectiveness, too.

New conservation and drainage expenditures are probably not keeping pace with abandonments, land use shifts, and maintenance needs on remaining facilities.

The decline in the estimated net value of soil conservation capital improvements has been partially offset by conservation and land protection improvements installed since 1954 under the Watershed Protection and Flood Prevention Act, which has entailed investments in land protection facilities with a net worth in 1975 of about $1.8 billion.

Overall, the peak value of soil and water conservation facilities reached $9.9 billion in 1955, but by 1975 had declined to $7.9 billion.

Irrigation value rises. Meanwhile, the value of irrigation investments has steadily climbed to more than $12 billion, with annual increases continuing at the rate of about $340 million a year.

In practical terms, the role of IDC investments as an agricultural input is crucial to farm production. A look at the IDC components shows why:

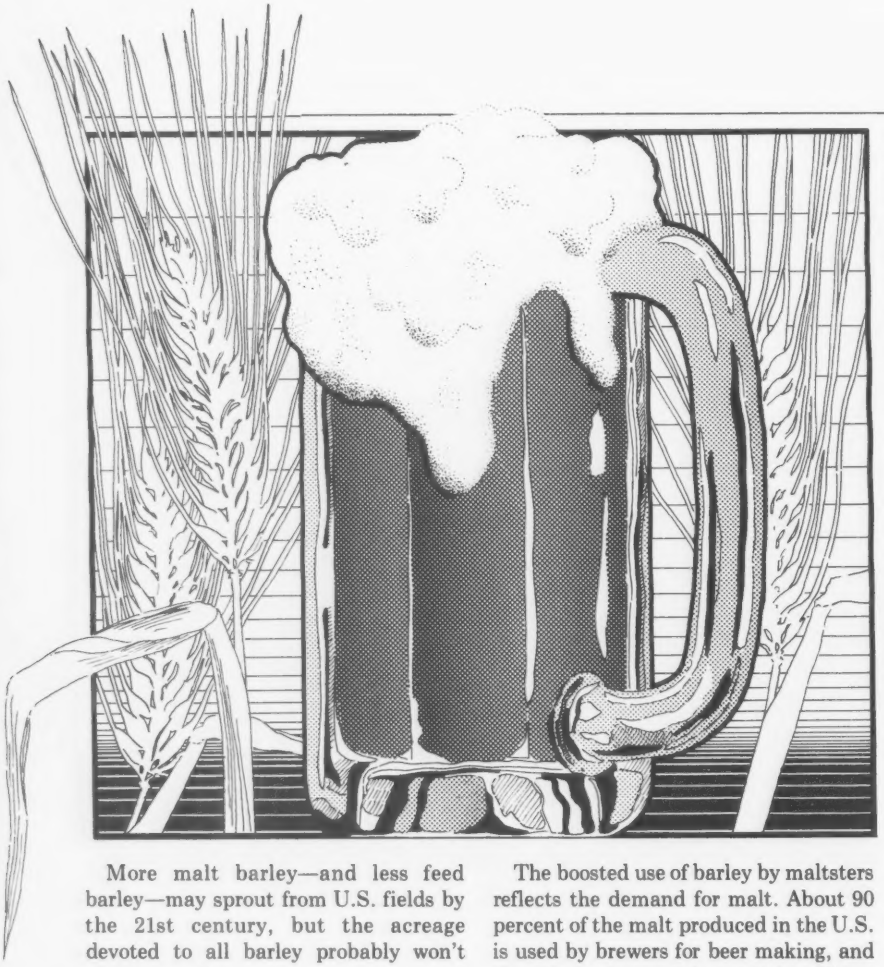
- Up to 1975, irrigation had added or improved 45 million acres of generally highly productive land.
- Through 1975, an additional 85 million acres was added or improved through drainage.
- Up to 1975 and largely since 1935, millions of acres of farmland have been protected and enhanced by soil and water conservation.

While the $27.5 billion IDC net value in 1975 constitutes a great investment in natural resources, its importance may not be fully recognized when compared with the net value of the land itself, which rose to $172 billion (1972 dollars) in the year.

[Based on "Natural Resource Capital in American Agriculture," by George A. Pavelis, Natural Resource Economics Division, Working Paper No. 37; and also on related unpublished ESCS data.]

Commodity Profile:

For Barley, the Future Is Malt



More malt barley—and less feed barley—may sprout from U.S. fields by the 21st century, but the acreage devoted to all barley probably won't change much.

The type of barley used and produced in the U.S. has been changing rapidly in recent years, primarily because maltster demand has climbed while feeder demand has slipped.

During the seventies, maltster use of barley has increased from less than one-fourth to over one-third of total disappearance. The amount of barley fed has slipped from 286 million bushels in 1970/71 to 168 million bushels in 1976/77—about two-fifths of the total.

The boosted use of barley by maltsters reflects the demand for malt. About 90 percent of the malt produced in the U.S. is used by brewers for beer making, and the rise in demand for malt is a direct result of Americans' increasing thirst for beer.

The foamy brew is popular. In 1974/75, U.S. brewers produced about 158 million barrels of brew, up from 89 million in 1957/58. They increased their use of malt from 2,578 million pounds to 4,225 million pounds, a rise of 64 percent.

If this rate of expansion in beer production continues in the future, brewers' use of malt will likely exceed 7 billion pounds by the year 2000. This translates into a maltster demand for malt barley in excess of 200 million bushels by that time.

Economic factors, such as increasing personal income, inflation, and unemployment, and demographic factors, such as growth in the segment of population that is considered the primary beer market (persons 20 to 50 years old), will support future expansion in beer production.

Less malt per barrel. The brewers' demand for malt will not grow as rapidly as beer production because the quantity of malt used per barrel has been declining slowly over the years. Back in 1950 brewers used 30.1 pounds of malt per barrel of beer; that total had slipped to 26.8 pounds by 1974.

This decline was more pronounced from 1950/51 to 1965/66 when use dropped to 27.5 pounds per barrel. Since 1965/66 the decline has been more gradual, and use of malt per barrel will likely stabilize in the future.

Feed use of barley has slipped considerably in the seventies. The 1977/78 marketing year will mark a milestone of sorts: For the first time, total food, industry, and seed use is projected to outpace feed use, 164 million bushels to 150.

This reflects a decline in the supply of barley available for feeding during this period. Supply was 694 million bushels in 1970/71, and 517 million bushels in 1976/77. The supply of competing feed grains also has an impact on feed use of barley.

Tilt toward malting types. But as long as the prices they receive for malt barley remain higher than the prices they get for feed barley, growers will likely tilt toward growing malt varieties, when they have an option. Feed barley, for example, was priced at $1.70 per bushel at

the Minneapolis market in December 1977.

Malting barley at the same market that month was priced at $2.32. Malting varieties usually draw higher prices because maltsters are willing to pay a premium for high-quality malting barley. The price of feed barley, on the other hand, is tied to other feed grains since feeders can substitute other grains if prices get too high.

Barley prices generally have been low—they may average $1.65-$1.85 a bushel for 1977/78—and that's reflected in the average farm value. In the past year, farmers have been raising wheat in larger-than-usual quantities and they've been receiving low prices.

Drooping farm value. In 1975, farm value for all barley was $918 million. The next year it slipped to $856 million. And 1977's crop is expected to bring in only $728 million, even though production was substantially greater.

Barley acreage harvested for grain has declined slightly in recent years. In 1973, harvested acreage was 10.5 million acres. That total slipped to 9.6 million in 1977, while the yield increased a little, from 40.3 bushels to 42.2. (The record was set in 1976 when yields hit 44.8 bushels.)

Wheat and barley ties. But yields, after increasing substantially since the early 1950's (when the average was 27.8), have apparently reached a plateau, according to 5-year averages. The average for 1966-70 was 42.0, and 42.3 for 1971-75.

Barley acreage is tied closely to spring wheat acreage in the Northern Plain States (North Dakota is the leading barley producer). While barley and wheat compete for acreage because of similar growing requirements, wheat is often more profitable. This explains why barley acreage has been adversely affected by increases in the acreage of spring wheat in the past.

Worldwide, barley production has been expanding, mostly because of strengthened demand for feed. The world area seeded to barley jumped 83 percent from 1950 to 1975, and all grain crops have skipped ahead 21 percent. In 1975, barley accounted for 12 percent of the acreage planted to all grain crops compared with 8 percent in 1950.

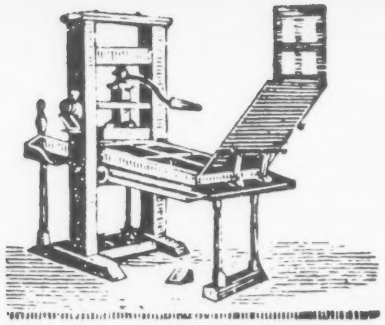
In the U.S., the acreage is expected to hold its own because of the strong demand for malt barley. However, this factor will likely result in a further shift in acreage from feed varieties to malt varieties.

[Based on *The U.S. Barley Industry*, by Walter G. Heid, Jr. and Mack N. Leath, Commodity Economics Division; *The Feed Situation*, Grains and Feeds Program Area, Commodity Economics Division; and supplemental material supplied by Heid.]

COMMODITY PROFILE: BARLEY

Production:	**Estimated 405 million bushels in 1977/78**
Farm value:	**$728 million in 1977, down from $856 million in 1976**
Leading States:	**North Dakota, California, and Montana**
Imports:	**The U. S. imported 1.1 million bushels of malting barley in 1977/78, mostly from Canada.**
Exports:	**The U. S. is the world's 6th leading barley producer, and exported about 60 million bushels in 1977/78.**
Trends:	**The use of barley for feed may continue to decline, but that slippage will probably be offset by greater use of barley for malt.**

Recent Publications



Single copies of the publications listed here are available free from *Farm Index*, Economics, Statistics, and Cooperatives Service, Rm. 252-GHI, 500 12th St. S.W., U.S. Department of Agriculture, Washington, D.C. 20250. However, publications indicated by (*) may be obtained only by writing to the experiment station or university. For addresses, see July and December issues of *Farm Index*.

The Manufacturing and Marketing of Nitrogen Fertilizers in the United States. Duane A. Paul and Richard L. Kilmer, National Economic Analysis Division. AER-390.

Farmers will not be paying less for fertilizers, this study suggests, because even though new processes have slashed certain costs—by cutting the amount of feedstocks used—energy and capital costs have risen dramatically. U.S. farmers have doubled their fertilizer use since 1960. They used a record 49 million tons in 1977.

Farmer Adjustments to Higher Energy Prices: The Case of Pump Irrigators. Melvin D. Skold, Natural Resource Economics Division. ERS-663.

Farmers who pump irrigate are taking a new look at their operations, trying to cut the rising costs of energy. Among the changes discussed here are shifting to crops that are more energy-efficient, using different forms of energy for pumps, and selecting more efficient methods.

Agriculture and the Property Tax. A Forward Look Based on a Historical Perspective. Jerome M. Stam and Ann Gordon Sibold, Economic Development Division. AER-392.

Relative to their incomes, America's farmers have been paying more of the national property tax bill than nonfarmers. This report advances hypotheses to explain the disproportionate tax burden. The period 1932-75 is covered.

P.L. 480 Concessional Sales. A. Vellianitis-Fidas and Eileen Marser Manfredi, Foreign Demand and Competition Division. FAER-142.

Updating previous ERS reports on the same subject, this booklet discusses the P.L. 480 "Food for Peace" program, including the amendments made to authorizing legislation. Included in the study are details of the history of the program, along with an explanation of procedures, and the negotiating for and implementation of agreements. The information is meant to aid Government officials and private exporters who work with the P.L. 480 program.

Farm Real Estate Taxes, 1976. Mary L. Bailey, National Economic Analysis Division. RET-17.

As services to land owners rise, property taxes, both State and local, also go up. In 1976, farm real estate taxes totaled over $3 billion, an increase of 8.5 percent over 1975. But that rate is slower than the national average, which was nearly 11 percent. The average tax per acre in the U.S. in 1976 was $3.17, compared with $2.92 the year before.

Issues in Milk Pricing and Marketing. Alden C. Manchester, National Economic Analysis Division. AER-393.

Milk marketing and pricing over the years have been developed in light of economic, technological, and institutional factors. The changes in the system, and its nature, are discussed in this report. Also reported are the issue of undue price enhancement by cooperatives, the changing functions of milk marketing cooperatives, and issues ahead in milk pricing.

Selected Topics Related to the Poultry and Egg Industries. Commodity Economics Division. ERS-664.

A reprint of articles that appeared between 1972 and 1977 in the *Poultry and Egg Situation*, this publication covers such topics as production and marketing costs for poultry and eggs, shell egg packing and broiler processing costs, price spreads for various poultry and egg products, and other subjects of interest to poultry and egg producers.

Economics of Agriculture. Reports and publications issued or sponsored by USDA's Economic Research Service (now Economics, Statistics, and Cooperatives Service). Supplement No. 8 to ERS-368.

This listing, intended to include citations for all published material of more than temporary interest, covers the period July 1975 through September 1976.

Farm Real Estate Market Developments. Supplement No. 1 to CD 82, January 1978. Larry A. Walker and John F. Jones, National Economic Analysis Division.

Prospective land buyers adopted a wait-and-see policy, and the rate of increase in farmland values slowed to 11 percent. This supplement to a longer, more detailed report also says the 11-percent gains compare with 17-percent jumps registered in the years ending February 1, 1976, and November 1, 1976. A breakdown of farm real estate values by States is presented.

Economic Trends

[1] Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. [2] Average annual quantities of farm food products purchased by urban wage earner and clericalworker households (including those of single workers living alone) in 1959-61—estimated monthly. [3] Annual and quarterly data are on 50-State basis. [4] Annual rates seasonally adjusted fourth quarter. [5] Seasonally adjusted. [6] As of March 1, 1967. [7] As of February 1, 1976. [8] As of November 1, 1976. [9] As of November 1, 1977.

Source: U.S. Dept. of Agriculture (Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Monthly Retail Trade Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale and Consumer Price Index).

ITEM	UNIT OR BASE PERIOD	1967	1976 Year	1976 Dec.	1977 Oct.	1977 Nov.	1977 Dec.
Prices:							
Prices received by farmers	1967=100	—	186	178	178	179	181
Crops	1967=100	—	197	190	178	185	183
Livestock and products	1967=100	—	177	169	177	174	180
Prices paid, interest, taxes, and wage rates	1967=100	—	191	192	201	202	203
Prices paid (living and production)	1967=100	—	187	189	196	197	198
Production items	1967=100	—	193	192	198	199	199
Ratio [1]	1967=100	—	97	93	89	89	89
Wholesale prices, all commodities	1967=100	—	183.0	187.1	196.3	197.0	198.2
Industrial commodities	1967=100	—	182.4	187.4	199.1	199.2	200.0
Farm products	1967=100	—	191.0	188.3	182.4	185.5	188.3
Processed foods and feeds	1967=100	—	178.0	179.0	184.5	186.7	189.3
Consumer price index, all items	1967=100	—	170.5	174.3	184.5	185.4	186.1
Food	1967=100	—	180.8	181.7	194.4	195.6	196.3
Farm Food Market Basket: [2]							
Retail cost	1967=100	—	175.4	173.0	179.2	180.9	181.8
Farm value	1967=100	—	178.4	170.4	180.0	179.6	181.3
Farm-retail spread	1967=100	—	173.5	174.6	178.7	181.7	182.1
Farmers' share of retail cost	Percent	—	39	38	39	38	39
Farm Income: [3]							
Volume of farm marketings	1967=100	—	121	135	176	175	—
Cash receipts from farm marketings	Million dollars	42,817	94,326	8,608	10,854	10,680	—
Crops	Million dollars	18,434	47,937	4,787	6,401	6,326	—
Livestock and products	Million dollars	24,383	46,389	3,821	4,453	4,354	—
Realized gross income [4]	Billion dollars	49.9	103.6	101.9	—	—	—
Farm production expenses [4]	Billion dollars	38.2	81.7	81.2	—	—	—
Realized net income [4]	Billion dollars	11.7	21.9	20.7	—	—	—
Agricultural Trade:							
Agricultural exports	Million dollars	6,380	22,997	2,081	1,705	2,082	2,324
Agricultural imports	Million dollars	4,452	10,990	1,096	855	815	1,285
Land Values:							
Average value per acre	Dollars	[6] 168	[7] 388	[8] 428	—	[9] 474	—
Total value of farm real estate	Billion dollars	[6] 182	[7] 417	[8] 460	—	[9] 508	—
Gross National Product: [4]	Billion dollars	796.3	1,706.5	1,755.4	—	—	1,965.1
Consumption	Billion dollars	490.4	1,094.0	1,139.0	—	—	1,255.3
Investment	Billion dollars	120.8	243.3	243.4	—	—	307.0
Government expenditures	Billion dollars	180.2	361.4	370.0	—	—	413.6
Net exports	Billion dollars	4.9	7.8	3.0	—	—	-10.8
Income and Spending: [5]							
Personal income, annual rate	Billion dollars	626.6	1,382.7	1,450.2	1,583.8	1,599.6	1,617.9
Total retail sales, monthly rate	Million dollars	24,413	53,542	56,685	60,778	61,482	61,048
Retail sales of food group, monthly rate	Million dollars	5,781	12,162	12,662	13,203	13,552	13,476
Employment and Wages: [5]							
Total civilian employment	Millions	74.4	87.5	88.4	91.4	92.2	92.6
Agricultural	Millions	3.8	3.3	3.2	3.2	3.4	3.3
Rate of unemployment	Percent	3.8	7.7	7.8	6.8	6.7	6.4
Workweek in manufacturing	Hours	40.6	40.0	40.0	40.4	40.5	40.3
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	5.19	5.42	5.78	5.81	5.87
Industrial Production: [5]	1967=100	—	129.8	133.0	138.8	139.3	139.6
Manufacturers' Shipments and Inventories: [5]							
Total shipments, monthly rate	Million dollars	46,487	98,168	104,475	113,119	113,295	—
Total inventories, book value end of month	Million dollars	84,527	166,587	166,587	176,789	177,101	—
Total new orders, monthly rate	Million dollars	47,062	98,497	106,600	116,543	116,098	—

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